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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|-------------------------|------------------|
| 10/655,985 | 09/05/2003 | Guoming G. Zhu | 46107-0091 | 8945 |
| 7590 | 12/15/2004 | | EXAMINER | |
| Douglas A. Mullen Dickinson Wright PLLC Suite 800 1901 L Street, N.W. Washington, DC 20036 | | | NGHIEM, MICHAEL P | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2863 | |
| | | | DATE MAILED: 12/15/2004 | |

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | |
|------------------------------|------------------|--------------|
| Office Action Summary | Application No. | Applicant(s) |
| | 10/655,985 | ZHU ET AL. |
| | Examiner | Art Unit |
| | Michael P Nghiem | 2863 |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on _____.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) 13 and 14 is/are allowed.
- 6) Claim(s) 1,2,4,7,10,15,16 and 19 is/are rejected.
- 7) Claim(s) 3,5,6,8,9,11,12,17,18 and 20 is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 05 September 2003 is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All
 - b) Some *
 - c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ . |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>9-5-03</u> . | 6) <input type="checkbox"/> Other: _____ . |

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities:
 - “threshold 140” (page 13, line 20) should be -- threshold 135 --.Appropriate correction is required.

Drawings

2. The drawings are objected to under 37 CFR 1.83(a) because they fail to show “integrated energy 87” (e.g. page 8, 19) as described in the specification. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement

sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: reference number "146" (Fig. 8). Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Double Patenting

4. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to

prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321□ may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claim 10 is provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 3, 13, and 14 of copending Application No. 10/458,716 (Daniels et al., US 2004/0083794). Although the conflicting claims are not identical, they are not patentably distinct from each other because Daniels et al. anticipates the claimed invention:

"A method of detecting an open secondary winding, comprising the step of measuring spark duration (claims 1, 3, 13, 14)."

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 2, 4, 7, 10, 15, 16, and 19 are rejected under 35 U.S.C. 102(e) as being anticipated by Daniels et al. (US 2004/0083794).

Regarding claim 1, Daniels et al. discloses a method (Fig. 8) of detecting an open secondary winding (18), comprising the steps of:

- enabling an integrator (245, 445, 450);
- resetting said integrator (Fig. 24);
- detecting an ionization voltage (paragraph 0075, line 1);
- integrating said ionization voltage over a spark window (paragraph 0159, lines 4-6);
- comparing said integrated ionization voltage with a threshold (paragraph 0159, lines 4-6);
- setting an open secondary flag (in 370) if said integrated ionization voltage is below said threshold (365, 370, Fig. 26).

Regarding claim 2, Daniels et al. discloses that said step of enabling an integrator comprises sending an open secondary detection enable flag signal (integration window, Fig. 24).

Regarding claim 4, Daniels et al. discloses a size of said spark window is between 300 microseconds and 3 milliseconds (290-292, Fig. 28).

Regarding claim 7, Daniels et al. discloses that said step of detecting an open secondary occurs during an ignition phase of an ionization signal (paragraph 0075, lines 1-3).

Regarding claim 10, Daniels et al. discloses a method of detecting an open secondary winding, comprising the step of measuring spark duration (paragraph 0158, lines 3-4).

Regarding claim 15, Daniels et al. discloses an open secondary winding detection apparatus (Fig. 24), comprising:

- an integrator (245) having an ionization signal input (output from 240), an enable input (integration window input), a reset input (reset input) and an output (output from 245);
- a comparator (260) having a first input (input from 250) operably connected to said output of said integrator (Fig. 24), a second input (255) operably connected to a threshold value (Fig. 24), and an output (output from 260).

Regarding claim 16, Daniels et al. discloses an open secondary detection enable flag signal (integration window) operably connected to said enable input of said integrator (Fig. 24).

Regarding claim 19, Daniels et al. discloses that said ionization signal input of said integrator is operably connected to an ionization current measuring circuit (paragraph 0078, lines 1-7).

Allowable Subject Matter

6. Claims 3, 5, 6, 8, 9, 11, 12, 17, 18, and 20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. Claims 13 and 14 are allowed.

Reasons For Allowance

8. The combination or method as claimed wherein using a rising edge of an ignition charge pulse to reset said integrator (claims 3, 18, 20) or a powertrain control module sets said open secondary flag (claim 5) or calculating the threshold by

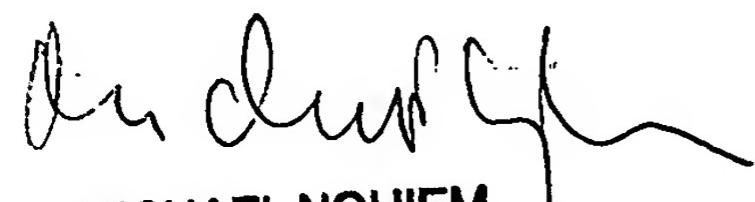
multiplying a maximum ionization voltage by a spark window time, whereby an integrated value is calculated, and multiplying said integrated value by a percentage (claims 6, 8) or comparing an ionization signal with a first threshold; measuring the spark duration when said ionization signal is greater than said first threshold; comparing said spark duration with a second threshold; and setting an open secondary flag (claims 11, 12) or an arrangement of a controller and a timer between two comparators (claim 13) or a powertrain control module having an input operably connected to said output of said comparator and an output operably connected to said enable input of said integrator (claim 17) is not disclosed, suggested, or made obvious by the prior art of record.

Contact Information

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael P Nghiem whose telephone number is (571) 272-2277. The examiner can normally be reached on M-H.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Barlow can be reached on (571) 272-2269. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



MICHAEL NGHIEM
PRIMARY EXAMINER

Michael Nghiem

December 10, 2004